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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,861	04/05/2001	Toshihide Nabatame	501.39983X00	6498

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ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON, VA 22209

EXAMINER	
KENNEDY, JENNIFER M	
ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/806,861	NABATAME ET AL.	
	Examiner	Art Unit	
	Jennifer M. Kennedy	2812	

-- The MAILING DATE of this communication app ars on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,8,9 and 12* is/are rejected.

7)☐ Claim(s) *3,4,6,7,10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election of Claims 1, 2, 5, 8, 9, and 12 in Paper No. 11 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Notice to Applicant

The substitute specification sent November 29, 2001 is accepted and has been entered in the case.

Claim Objections

Claims 1 and 8 are objected to because of the following informalities: The preambles of both claims are unclear. The examiner is not sure where the preamble ends. The examiner suggests changing the claims to state

"A method of manufacturing a semiconductor device comprising the steps of: laminating to form a bottom electrode..."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation that the ratio of the reaction gas to the carrier gas is 1% or more is indefinite. Ratios are commonly represented in fractions. Further it is unclear if the ratio represents a volume or molar ratio. The examiner requests clarification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5 (with respect to claim 1), 8, 9, and 12 (with respect to claim 8) rejected under 35 U.S.C. 103(a) as being unpatentable over Kotecki et al. (U.S. Patent No. 5,973,351) in view of Hicks et al. (U.S. Patent No. 5,130,172).

Kotecki et al. discloses the method of forming a semiconductor device of laminating to form a bottom electrode (46), a dielectric (47), and a top electrode (48) on an underlying substrate having a three dimensional structure, wherein the top and bottom electrode may be formed of Ru, RuO_2 or a mixture of the two (see column 7, lines 20-40).

Kotecki et al. does not disclose the method of forming a top and bottom electrode by a metalorganic chemical vapor deposition process at 180-250 ^{O} C using a cyclopentadienyl complex as a precursor.

Hicks discloses the method of forming a top and bottom electrode or Ru or Pt by a metalorganic chemical vapor deposition process at 180-250 ^{O} C using a cyclopentadienyl complex as a precursor, wherein one H_2 is used as the reaction gas (see column 3, line 20-45, and column 4, line 60 through column 5, line 5, Example 1 and claim 1), and wherein the cyclopentadienyl complex is dissolved in toluene (column 7, line 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the electrode layers of Kotecki et al. by the method of Hicks in order to form thin layers (see Hicks, column 1, lines 15-20).

Kotecki et al. and Hicks et al. do not explicitly disclose the ratio of the reaction gas to the carrier gas, nor the solubility for the starting precursor. The selection of the ratio of the gases and the solubility of the precursor in the solvent is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species. In re Jones, 162 USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980) (discovery of optimum value of result effective variable in a known process is obvious).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (703) 308-6171. The examiner can normally be reached on Mon.-Fri. 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

jmk
February 7, 2003

John F. Niebling
Supervisory Patent Examiner
Technology Center 2800